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Reclamation Can Relieve Asbestos Shortage

BECAUSE of its incombustibility, strength, and low conductivity, asbestos is widely used in roofing shingles, fireproof paints, stove and building insulation, heat-resistant aprons and gloves, and brake linings. Present supplies of this raw material are critically short.

Simple, effective procedures for reclaiming asbestos from discarded pipe insulation have been developed at the National Bureau of Standards. During the reclamation, extraneous material is removed from the asbestos cloth by chemical treatment, and the cleaned cloth is reduced to fiber form in a paper-pulp beater. The recovered asbestos is unchanged chemically, with little or no shortening of the fibers. It appears well suited to further use as electrical and heat insulation, for making asbestos paper, and as a filler in molded plastic compounds.

Discarded pipe insulations which can be reclaimed are of three general types: asbestos cloth, asbestos-cotton cloth, and molded pipe lagging having asbestos fiber as a filler and magnesia cement as a binder. Even asbestos-cotton cloth with glass strands woven into the yarns or painted or covered with magnesia cement can be utilized in the process. After removing the extraneous material, the cleaned yarns or cloth can be reduced to fibrous form.

For applications where flexibility is desired, such as asbestos paper or cloth chrysotile asbestos is used. Although this type of asbestos is quite satisfactory for insulating heated pipes, it loses its water of constitution and becomes brittle when heated to about 800 C. It was therefore necessary to develop procedures that would reclaim the asbestos fibers without the use of excessively high temperatures.

Asbestos or asbestos-cotton fabrics other than those containing paint can be freed of adhering cement by first treating with 5 per cent hydrochloric acid and then rinsing. Fabrics painted on one side are treated with alkali instead of acid to remove the paint as well as the cement. This is accomplished by boiling in 5 per cent sodium hydroxide solution for 15 to 30 min, followed by a preliminary rinsing, a warm wash with a synthetic detergent to remove the paint pigments, and a final thorough rinsing.

Removal of cotton from the cleaned cloth is best effected by the use of heat, but the process requires rather careful control to avoid loss of the water of constitution and consequent embrittling. Thin layers of the material are heated in a muffle furnace at a temperature between 400 and 450 C. The time necessary to burn out the cotton in this temperature range depends largely on the equipment used. After removal of cement, paint, and dirt, the cloth is reduced to fiber in a rotary food blender or in a paper pulp beater.

An acid wash followed by rinsing will remove most of the cement from fabric containing glass strands. But removal of the dirt is difficult without loss of some of the short asbestos fibers which float off with the dirt. The recovered product contains glass fibers intermixed with the short asbestos fibers and thus will probably be of limited use.

So far, molded insulation yields only 15 per cent of fiber, highly contaminated with foreign materials. Thus, recovery of asbestos from such material does not seem very practicable. In any case, use of the fibers recovered from the molded insulation will have to be limited to magnesia-cement components and similar products.

A Flex-Tension Machine for Shoe Upper Leather

EXCELLENT flexing endurance has made leather especially suitable for the manufacture of shoes. However, satisfactory methods for measuring this property in leather have been lacking, largely because of the extremely long time required to cause failure of a specimen. Recently the National Bureau of Standards developed a flex-tension machine which accurately evaluates the flex endurance of shoe upper leather within a relatively short time. The work was done in the course of an investigation of the flex life of leather sponsored at the Bureau of the Office of of the Quartermaster General. This leather flexer has proved effective in detecting differences in leathers due to tannage, lubrications, and other treatments. It should thus be of value in the development of improved leathers for shoe uppers.